DOCUMENT RESUME

ED 334 244 TM 016 792

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TITLE Development and Utilization of a Fair Measure of Racial Integration: A Twelve-Year Quantitative Evaluation.
PUB DATE Apr 91
NOTE 67p.; Paper presented at the Annual Meeting of the American Educational Research Association (Chicago, IL, April 3-7, 1991).
PUB TYPE Reports - Evaluative/Feasibility (142) -- Speeches/Conference Papers (150) -- Tests/Evaluation Instruments (160)

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS Academic Achievement; Computer Software; Culture Fair Tests; Elementary Education; *Elementary School Students; Friendship; Longitudinal Studies; *Program Evaluation; *Public Schools; *Racial Integration; *School Desegregation; *Sociometric Techniques; Test Construction; Test Use; Urban Schools
IDENTIFIERS *Springfield Public Schools MA

ABSTRACT

Following implementation of a city-wide, court-ordered desegregation plan in the mid-1970's, a sociometric instrument was developed and administered in the Springfield (Massachusetts) Public Schools at both the upper and lower elementary school levels to analyze classroom social structure, provide feedback for teachers, and provide data for evaluating the extent of integration throughout the city. More than 3,000 students in grades 3 through 6 are tested yearly. A computer program designed to generate useful information for classroom teachers was subsequently developed and has been used extensively since 1978 at the classroom level as a diagnostic/prescriptive instrument and at the system level as a program evaluation tool. System-wide sociometric analyses over the past 12 years indicate that students in Springfield are making more friends across racial lines that was the case immediately following implementation of the desegregation plan. However, most classrooms and schools are far from optimal integration. Analysis of achievement and sociometric selections indicate the importance of achievement in student friendship selections. As along as ability grouping and the achievement gap between white and minority students persist, integration will be less than desired. The student survey instrument and a sociogram report for a practice schoolroom are appended. Ten tables, two graphs, and a 44-item list of references are included. (TJH)

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Development and Utilization of a Fair Measure of Racial Integration: A Twelve-Year Quantitative Evaluation

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Paper presented at the Annual Meeting of the American Educational Research Association

Chicago, April 1991

Running head: DEVELOPMENT AND UTILIZATION

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Abstract

Following implementation of a city-wide court ordered desegregation plan in the mid 1970s, a sociometric instrument was developed and administered in the Springfield Public Schools at both the upper and lower elementary levels in order to analyze classroom social structure, provide feedback for teachers, and also to provide data for evaluating the extent of integration throughout the city. A computer program to generate useful information for classroom teachers was subsequently developed and has been utilized extensively since 1978 at both the classroom level, as a diagnostic/ prescriptive instrument, and at the system level as a program evaluation tool.

System-wide sociometric analyses over the past twelve years indicate that students in Springfield are making more friends across racial lines than was the case immediately following implementation of the desegregation plan. However, most classrooms and schools are far from optimal integration. Analysis of achievement and sociometric selections further indicate that achievement level is an important factor in student friendship selections and that as long as ability grouping and the achievement gap persists between white and minority students, integration will be less than desired.

Development and Utilization of a Fair Measure of Racial Integration: A Twelve-year Quantitative Evaluation

Background

In 1974 the Springfield Public Schools implemented the Six District Desegregation Plan in order to alleviate racial imbalance in five of the elementary schools in the city. The plan divided the city into six districts, five of which contained one of the predominantly black imbalanced inner-city schools. (Schools in District VI, predominantly Hispanic, were not involved in the plan, though the racial distribution in these schools has been improved through voluntary measures by attracting non-Hispanic students into the district and Hispanic students out of the district with magnet school programs.) In each of the other five districts, white and black students were bused between the five imbalanced schools and the other predominantly white schools.

Grade structures were also revised. In each district, one or two grade 5,6 schools were established along with several grade 1-4 schools, replacing K-6 schools. Kindergarten children were exempt from the racial balance plan and attended their neighborhood schools.

Beginning in September of 1974, hundreds of elementary age children were introduced to racial pluralism for the first time in their schooling. Prior to that date, fifteen of the thirty-six elementary schools were racially isolated with enrollments of over 85% white and five were racially segregated having over 85% black pupils (Roberts & George, 1986). The event provided a unique opportunity to study the social effects of desegregation and integration on elementary school children.

The purpose of the Six District Desegregation Plan was to accomplish desegregation which, as defined by Gordon (1976) and others (Pettigrew, 1975; Weinberg, 1981) is the physical mixing of the races without regard to the relative status of the two groups. Thus, as a result of the desegregation plan in Springfield, black, white and Hispanic students attended school together.

However, desegregation is not an end in and of itself. Clark (1978) concluded that young people need to learn to live in a world that will require an interaction of diverse human beings. That requires creating integrated schools and classrooms out of desegregated schools and classrooms.

Integration, as defined by Allport (1954), is the interaction of the races based upon mutual respect and equal

status among them. Integration is thus the final stage of a desegregation process where students of different races and ethnic groups accept one another as equals and interact with one another in a positive manner. That task, to translate desegregation into integration, in Springfield and in other desegregated communities throughout this country, as observed by St. John (1975), still remains.

Sociometric Instruments

In order to assess the initial impact of the Six District Desegregation Plan on student friendships, Howell (1976) examined the sociometric choices of older elementary school children placed in a desegregated situation, many for the first time. His results suggested that students with prior experience in a desegregated setting made significantly more other-race friends than children whose prior experience had been in relatively isolated classrooms and who were experiencing desegregation for the first time.

Beginning in 1978, more extensive sociometric studies were conducted in order to determine, in a fair and equitable manner, the extent to which the desegregation plan was working to produce integration at each elementary school and system-wide as well. From 1978 to the present, a sociometric

instrument has been administered twice each year to students in every elementary school in Springfield. To insure fair comparisons between schools, a statistic called the Ratio of Actual to Expected Cross-Racial Selections has been generated. As will be seen below, this statistic accounts for differences in the racial distribution of students between schools in determining an index of integration.

Sociometric instruments can be used by teachers in desegregated classrooms to more fully understand the social dynamics of their classrooms and to improve the integrated nature of their classrooms and can also be used as research tools to determine the effectiveness of certain teaching strategies on integration, as reported by Taba (1962). In her considerable work with sociograms, Taba found sociometric instruments to be useful in determining student friendship preferences, for planning strategies to overcome any social weaknesses observed, and for assessing changes in socialization resulting from the intervention strategies.

Other researchers have also found sociograms to be useful in evaluation of classroom social structure. Lindzey and Borgatta (1954) felt that sociometric instruments accurately described the quality of interpersonal relationships, represented an important aspect of an

individual's social environment, and were quick and easy to administer with little expense or classroom interruption. Lane and Beauchamp (1955), discussing ways in which teachers can help children to grow in their roles of group membership, mention sociometric techniques as one way to learn about the social structure of the group. Barclay (1966) indicated that sociograms were good preliminary screening devices for teachers to use for possible behavior modification within their classrooms.

More specific to integration, Epstein (1968), in discussing various teaching strategies to bring about integration in a desegregated setting, recommended sociometric techniques:

> Simple sociometric techniques can help the teacher diagnose patterns of association in the classroom objectively and systematically. Questions like, "whom would you like to sit next to on the bus when we take our trip?" and "Which three people would you like to work with on your committee?" administered in written form, adequately reveal the degree of separation along group lines. (p. 96)

Gade (1977) stated that sociograms could be useful tools for classroom teachers and also for elementary school counselors

to reduce cliques, racial or otherwise, and to identify social isolates.

According to several sources, sociograms can reveal certain aspect of the social structure in classrooms of which classroom teachers are not aware. Taba, Brady, Robinson and Vickers (1951) found that sociograms revealed important problems in student interrelationships where teachers had seen no problem. Gronlund (1950) found wide variations in teachers concerning their judgments of the sociometric status of their students as revealed via sociograms. Blyth (1958), studying the social structure of junior high students, revealed cleavage between two groups of boys that had gone unnoticed by teachers because the two groups were not hostile or aggressive. Bonney (1974) found that teachers had more difficulty identifying poorly accepted students than popular students as determined by sociograms. These and other studies show that teachers are limited in their perception of the social dynamics of their classrooms and that sociometric instruments can be useful in providing teachers with a more accurate assessment of the social structure within their classrooms.

While sociometric instruments may be helpful to teachers, are they valid and reliable measuring instruments?

Studies conducted to determine the validity and reliability of sociograms have been encouraging. Remers (1963) concluded that sociograms appear to be reliable, at least short term, and valid, but that standard statistical procedures in determining reliability and validity are difficult to apply. Barclay (1966), summarizing the research in this area, concluded that student selections on sociograms were found to have considerable concurrent validity and high reliability coefficients initially with declines over time. White (1969) found considerable correspondence between sociometric test selections and the actual selections of students in an activity, work, or play situation. Reliability in over twenty studies showed a high degree of consistency in choice status groups over a period of several months, with stability coefficients ranging from 0.67 to 0.84.

Despite the ease of construction and administration of sociometric instruments, the valuable insight they can provide for teachers, and their apparent validity and reliability, and despite the fact that sociometry has existed for some 50 years, there have been, according to Markus and Barasch (1982), "few attempts to systemize or standardize teacher reporting in the area of social achievement" (p. 2). The reason for the lack of utilization of sociometry,

according to these researchers, is because of difficulties in translating the information gathered into a useful form. The authors designed a computer program which can plot maps detailing the social structure of classroom groups. The obvious advantage to such a system, of course, is that the data obtained from the instruments can be easily compiled into useful information for teachers.

The Springfield Instrument

The sociometric instrument used in Springfield was developed in 1978 and has been administered in the fall and spring of each year for the past twelve years (see Appendix A). The instrument is administered by staff within the Research Department to some third, all fourth, and some fifth and sixth grade students at all elementary schools in the city. In all, more than 3000 students in over 100 classrooms are tested yearly.

On the instrument, students are asked to select another student from their class in answer to each of the following seven questions:

1. Which classmate would you choose to work with on a school project?
2. Whom would you choose to eat lunch with?
3. Which classmate would you pair up with to go on a field trip?
4. Which student do you most like to play games with?
5. What student would you most like to have sit near you in school?
6. Who is your newest friend in the classroom?
7. Whom would you choose to come to your home for a party?

Following the administration of the instrument, results are tabulated by computer and reports are forwarded to the classroom teachers and building principals.

The report for teachers consists of the following information (see Appendix B):

1. A matrix of students with their selections on each question
2. The number of times each student selected each other student
3. A listing of reciprocal pairs in the classroom

4. The number of cross-racial selections made by each student compared to the number expected by chance
5. The number of times each student was selected
6. The cross-racial selection rate made by each subgroup in the class compared to the rate that would be expected by chance
7. Listings of subgroups whose cross-racial selection rates were significantly different than expected together with a list of suggested activities to improve integration
8. The cross-racial selection rate for each of the seven questions on the instrument

The sociogram report for principals consists of a summary analysis for each classroom and for the building together with progress reports for the building over time. Data is also compiled system-wide and is reported in an evaluation report every year.

A computer program written in BASIC has been developed that reads in raw data from the student sociometric instruments and then prepares useful reports for classroom teachers and building principals. One of the unique features

of this program is the computation of an expected cross-racial selection rate for each race/sex subgroup.

Impetus for computation of an expected cross-racial selection rate comes from Campbell, Kruskal and Wallace (1966) and Nutall (1980). Campbell et al. (1966) were perhaps the pioneers in the use of expected selection rates in sociometry in their study of classroom seating arrangements where voluntary seating was allowed. Their index compared the actual observed adjacencies to the number of adjacencies expected in a random situation which depended upon the number of white and black students in the classroom. Nutall (1980) used a variation of this index developed from binomial probabilistic theory, essentially a ratio of the observed or actual pairings to the number of pairings expected randomly.

The expected cross-racial selection rate used in the Springfield computer program is derived in a similar fashion to that of Nutall (1980) with one essential difference. Where Nutall's EA statistic (expected number of cross-racial pairs) represents the expected number of interracial pairings and is calculated using the number of white, black and Hispanic students in the room, the EA statistic in Springfield is derived by using the number of white, black and Hispanic students in each sex subgroup, as our studies

have shown that fewer than 7% of all selections made at this age/grade level are cross-sex selections.

A number of other studies across the country at this age level also indicate that students overwhelmingly select students from their own sex subgroup. For example, DeVries and Edwards (1974), citing a number of studies in the area of student friendship selections, reported that "the existence of barriers to interaction among students across sex lines, particularly for children in early adolescence, has been frequently noted" (p. 741). A predominance of same-sex choices were reported for children as young as four or five as well as for junior high school age students. Asher and Singleton (1978), for example, in a study of third grade children in desegregated schools reported that "most discrimination...was against members of the opposite sex rather than against members of a different race" (p. 18). Similarly, Bennett (1979), in a study of 41 seventh and eighth grade classrooms found that "friendship choices were strongest and most frequent within the same sex and race " (p. 7)

The ratio comparing the actual rate of cross-racial selections to the expected rate (where a higher value represents greater integration and where a value of 1.00

would indicate "optimum" integration) is, in the opinion of this researcher, a more equitable method for analyzing and comparing the extent of integration across various classrooms, schools and groups. While cross-racial selection rates depend solely upon the number of students available to select cross-racially, the ratio takes into account the number of possible cross-racial selections available. Hence it is possible that a school with a low cross-racial selection rate (but with few cross-racial selections available) could actually be more integrated than a school with a higher cross-racial selection rate but with more opportunities for cross-racial selections.

A sample computation of expected cross-racial selection rates is as follows:

Classroom X has the following race/sex composition:

5 white boys

4 white girls

3 black boys

6 black girls

4 Hispanic boys

4 Hispanic girls

There are 12 boys in the class. A boy would usually make one of 11 male selections (self-selections are not allowed.) If selections by boys were totally random, since 7 of the 11 possible selections are non-white, we would expect that 7 out of 11 (or 64%) of the selections by white boys would be cross-racial. Since 9 of the 11 possibilities are non-black, we would expect that 9 out of 11 (or 82%) of the selections by black boys would be cross-racial. Finally, since 8 of the 11 possible selections by Hispanic boys are non-Hispanic, we would expect that 8 of 11 (or 73%) of the selections by Hispanic boys would be cross-racial.

Similarly for girls, we would expect that 10 of 13 (77%) of the selections by white girls, 8 of 13 (62%) of the selections by black girls and 10 of 13 (77%) of the selections by Hispanic girls to be cross-racial.

Expected Cross-racial selection rates for combined groups (i.e. whites, blacks, Hispanics, boys, girls, total) is derived by algebraically summing two or more of the above.

Part 7 of the teacher report examines the differences between the actual observed cross-racial selection rate and the expected cross-racial selection rate based on the previous analysis using the Fisher Exact Probability Test, a test designed to calculate the significance of differences between two proportions (Courts (1966), or Roscoe (1975)). For small samples, the Fisher test approximates the same results obtained when using the normal distribution with large samples. Should there be any significant differences (at the .01 level) between the actual CRS rate and that expected by chance for any of the race/sex subgroups, this information is communicated to teachers for possible corrective action. Suggestions for corrective action are provided for teachers as well. These suggestions come as the result of an earlier study of teachers with consistently high ratios of actual to expected cross-racial selections.

Utilization of the Sociometric Instrument

Results of sociometric testing in Springfield have been utilized in a variety of ways with the intent of improving the level of integration across the system. For example, sociometric test results have been compiled for each

classroom and across classrooms, on both the fall testing and the spring testing. Detailed analysis of the extent of change from the fall to the spring testing is a part of the spring test result package. The primary purpose of both testings, of course, is to provide feedback to teachers concerning the extent of integration in their classrooms. Comparisons across classrooms also enables the identification of teachers whose classrooms consistently record high levels of integration. Extended interviews and observations of teachers so identified have been conducted, resulting in a booklet of teaching strategies for improving integration which was disseminated to all elementary staff in Springfield and to other desegregating communities in Massachusetts as well (Roberts, 1982).

In addition to comparisons at the classroom level, school by school comparisons concerning the extent of integration have been compiled and reported as part of an annual evaluation document which is disseminated locally as well as at the state level. Schools with less than satisfactory levels of integration have been encouraged to revise existing programs or implement new programs to improve the level of integration using city funding sources or state entitlement funds for desegregation under Chapter 636, the

Massachusetts Racial Imbalance Act. As a result, some schools have dramatically improved the level of integration, as reported by Howell and Roberts (1982).

Analyses of the impact of special programs funded under Chapter 636 to enhance integration have also been conducted. Chapter 636 funds have been used to plan, organize, and structure activities especially designed to promote cross-racial interaction leading to greater acceptance and friendships across racial lines. These activities have taken the form of options in the areas of art, music, science, theatre arts, conversational Spanish and mini-courses. As reported by Howell and Roberts (1982), schools with special enrichment programs such as these recorded significant gains in cross-racial selection rates compared to schools without such programs. According to Donnellan and Roberts (1985), activity-based science programs, in particular, which emphasized hands-on learning experiences in mixed-race groups, were found to be especially effective in enhancing both integration and achievement, an educational double-bonus.

Results have also been compiled system-wide by grade and race-sex subgroups over time in order to chart the progress of integration for the system as a whole. These results have been communicated regularly as part of our interim and final

evaluation reports. For the first eight years of our study, hopefully, at least in part, the result of some of the efforts noted above, the level of integration system-wide increased steadily. However, in the most recent years, the level of integration has been declining, a definite area of concern in Springfield.

One area which needed to be investigated was the possible effect of an increase in pull-out instructional programs for basic skills and gifted and talented instruction which occurred at this time. As a result, the relationship between student selections and student achievement was examined utilizing a new computer program that computes the average achievement level (NCE) of student selections by selection type (i.e. same race, cross-race) and question.

Insert Figure 1 about here

Insert Table 1 about here

System-wide compilation of classroom sociometric testing results, as shown in Figure 1 and Table 1, indicate that there was steady progress toward increased integration in the

initial years following system-wide desegregation. The percentages of selections that were cross-racial for various race-sex subgroups and at both the lower elementary level (grades 3-4) and the upper elementary level (grades 5-6) showed consistent increases from 1978 until 1986, from approximately 30% of all selections made in 1978, an improvement from the 23% in the initial year of desegregation as reported by Howell (1976), to approximately 48% of all selections in 1986. Since that peak in the fall of 1986, however, the rates have steadily declined to their present level of 43%.

Closer examination of Table 1 indicates that, over time, black students, particularly black boys, have the highest cross-racial selection tendency while white students, particularly white girls, have the lowest tendency to select cross-racially. Boys, in general, are more inclined to make cross-racial selections than girls while younger elementary students are slightly more inclined to select cross-racially than older elementary students.

Insert Figure 2 about here

Insert Table 2 about here

It is also possible, on a system-wide basis, to compare the actual rate of cross-racial selections made to those that would be expected if students selected totally at random based upon the racial distribution of the individual classrooms. This is a more equitable measure in comparing classrooms or groups because it takes into account differences in the number of students in the potential selection pool.

The ratios of actual to expected cross-racial selections over twenty-four testing periods are presented in Figure 2 and Table 2. As seen there, a consistent increase in ratios from the initial testing in 1978 until the fall of 1986 is evident, again for all subgroups and at both the lower and upper elementary levels. In 1978, students were making fewer than half of the cross-racial selection choices that could be expected by chance; by 1986, students were making more than 70% of the selections that could be expected by chance. Since 1986, however, the average ratio has declined, reaching a low of 0.64 in the fall of 1989.

Black students, particularly black boys, have the highest ratio over time, peaking at 0.85 (making 85% of the

possible cross-racial selections) in 1986. White and Hispanic girls, on the other hand, consistently record the lowest ratios. Boys, in general, recorded higher ratios than girls, while younger students recorded higher ratios than older students.

After several years of growth in the area of integration, the declines evidenced in 1986 were a major concern. The only significant changes within the school system at this time were an increased emphasis on basic skills and the implementation of a gifted and talented education program, both of which involved an increase in pulling students out of classrooms for educational programs with the employment of hundreds of additional teachers in our schools as a result of a new state funding source (Chapter 188.)

This significant new state funding became available in Springfield as part of a new state-wide initiative in basic skills assessment. As a result, several hundred new teachers were hired to provide basic skills and enrichment instruction in an ability group setting in reading, mathematics and other areas. Though in most cases in the past, students were grouped by ability for reading and mathematics instruction, a large increase in the number of students receiving

instruction of a pull-out nature resulted. In visits to classrooms, many teachers reported that they seldom saw their entire class, sometimes reporting as little as 30 minutes per day with their class intact. Students in some cases were identified as in need of remediation, while in other cases students were identified as talented and gifted. An increase in emphasis on basic skills instruction (perhaps resulting in a lessened emphasis on integration activities) and the increase of pull-out instructional groups as a result of the new teachers was considered to be a factor in the decline of cross-racial selections.

Insert Table 3 about here

One area of particular interest was in determining whether or not there was any relationship between student friendship selections and student achievement level. If such was the case, then this increase in ability group instruction of a pull-out nature could potentially impact on integration because of the considerably wide disparity in achievement levels between white, black and Hispanic students in Springfield, despite more than a decade of desegregated schools. Indeed, the achievement gap between white and

minority students, as seen in Table 3, has been increasing in Springfield, presently averaging approximately one year between white and black elementary students and approximately two years between white and Hispanic elementary students. In order to determine if there was a possibility that the decreases in integration were related to increases in ability grouping, the relationship between achievement levels of students and their friendship selections was investigated.

Research evidence across the country has been rather clear that integration does not just occur naturally as a result of placing students of different races or ethnic groups together. Integration takes considerable effort on the part of classroom teachers. The way in which the classroom is structured for instruction is critical in the area of integration. Hawley et al. (1981), for example, in a synthesis of findings relative to school integration, found the following to be important in furthering the goals of integrated education: use of multiethnic curriculum, maximal parent involvement, development of a comprehensive human relations program, providing opportunities for cooperative learning, peer tutoring, and the elimination of ability grouping. Hawley et al. (1981) also stated that better

cross-ethnic relations were more likely when achievement grouping and tracking did not result in racial isolation.

According to studies by Damico, Bell-Nathaniel and Green (1981), conducted in five desegregated middle schools, cross-racial friendships were significantly higher in schools where students spent the majority of their time in heterogeneous classrooms utilizing team learning than in the more traditional schools where students were tracked by ability. Indeed, implementation of homogeneous grouping practices could result in a decrease of existing cross-racial friendships. Schofield & Sagar (1977), for example, observed that the number of black friends of white students all of whom were placed into a tracked program actually declined.

A recent paper by Clark (1986) suggests that ability grouping and achievement levels play an important role in the formation of student friendships across racial lines. According to Clark's survey of the research, white students tend to have more minority friends when white and minority students' social class and achievement levels are comparable. However, Clark also found that the condition for optimizing integration as suggested by Allport (1954) (i.e. prolonged contact between those of equal status) was seldom met in desegregated schools primarily because ability grouping

results in separation of the students by race. Braddock and McPartland (1987) agree, concluding that "most of the classroom resegregation is produced by instructional grouping practices that assign students to classes on the basis of their level of academic achievement" (p. 24).

Perhaps the most extensive study conducted concerning the resegregation of students in ability groups was conducted by Haller (1985). This study of 49 self-contained classrooms in five school districts in the eastern United States found that black students were significantly more inclined to be assigned to lower ability groups in elementary schools, though the author cautioned that the assignments were seldom the result of race per se but usually the result of achievement differences. Grant and Rothenberg (1986), in a review of research, also indicated that "grouping and tracking often parallel students' non-academic attributes such as race or ethnicity....and....lower socioeconomic status and minority students are likely to be placed into lower groups" (p. 30).

Regardless of how or why students are placed in ability groups, such placement does limit interaction, and, if the groups are racially segregated, such placement limits opportunities for integration as well. Hallinan (1976), for

example, in a study of 51 classrooms that was both cross-sectional and longitudinal and employed both observational and sociometric techniques concluded that "the single most important factor affecting the formation and development of friendships among children is the amount of interaction in which they engage" (p. 256). A later study by Hallinan and Tuma (1978), examining the effect of classroom variables on student social development in eighteen elementary classrooms, found that most student choices for friends on sociometric instruments had the same reading teacher as the selector and spent a high percentage of instructional time together in their reading groups. A study by Hallinan and SOrensen (1985) conducted in 32 elementary classrooms, likewise concluded that membership in the same ability group significantly increased the probability that students would become best friends and that this probability increased over time. Finally, Rosenbaum (1980), in a review of the social implications of educational grouping, concluded that "the research literature has noted a clear relationship between curriculum grouping and friendship choices...and this association remains significant even after controlling for social class, ability, and parental educational ambitions for students" (p. 387).

An integration study conducted by Jarret and Quay (1984) more specifically addresses the possibility of the effects of ability grouping on cross-racial friendship selections. In their study of kindergarten and first grade children, they found that over 70% of kindergarten children chose one or two best friends of another race, but over 70% of first grade children selected friends from only their own racial group. While ability grouping was probably not a factor at the kindergarten level, it was almost certainly a factor by first grade.

Thus, evidence is available that one of the factors affecting student friendship formations in desegregated classrooms appears to be the way that classroom instruction is structured. Ability grouping often leads to resegregation of students in desegregated classrooms and affects student friendship formation, specifically the formation of cross-racial friendships.

An investigation of the relationship between the achievement level of students selecting and the achievement level of the students selected on the sociogram was conducted in Springfield over the past two years. Results of a preliminary study were reported by Roberts (1989). A computer program which determines average NCEs of student

selections given an NCE score for each student in the class was developed as an accessory program.

Insert Table 4 about here

According to the information presented in Table 4, there is a definite correlation between the achievement level of the selector and that of the students selected. In both years of the study, for whites, blacks, and Hispanics, for students in grade 4, grade 5, and grade 6, and for both males and females, there was a significant positive correlation between the Metropolitan Achievement Test Basic Battery NCE (normal curve equivalent) of the selector and that of the students selected on the sociogram. Correlations ranged from .24 to .50, with the highest correlations by whites, students in grade 6, and females.

Insert Table 5 about here

Insert Table 6 about here

Selectors were next divided into three achievement levels: low, average, and high, according to stanine scores on the Metropolitan Achievement Test Basic Battery. As seen in Tables 5 and 6, in both 1989 and 1990, for white, black, and Hispanic students, for students in grades 4, 5, and 6, and for both males and females, the mean normal curve equivalent of students selected by high achievers (stanines 7-9) was higher than that of average students (stanines 4-6) or that of low achievers (stanines 1-3). Differences in each case were significant. Most significant differences were by whites, students in grade 4, and females (1989).

According to the information in the three previous tables, elementary school students in Springfield tend to select other students of similar achievement levels as themselves. As indicated in Tables 5 and 6, the pattern of student selections according to achievement level is apparent for each of the three racial groups. Low achieving students, whether white, black or Hispanic, select students of lower achievement levels than do higher achieving white, black or Hispanic students. If ability groups are racially disproportionate, as they are in Springfield as indicated by the wide disparity of achievement levels presented in Table

3, with white students over-represented in higher ability groups, black students over-represented in average ability groups, and Hispanic students over-represented in lower ability groups, then friendship selections would be more likely to be along racial lines. Reducing or eliminating ability groups, particularly those of a pull-out nature could, therefore, help to increase the incidence of cross-racial friendships.

Insert Table 7 about here

A second analysis investigated the relationship between student achievement level and the number of selections received on the sociometric test. As seen in Table 7, there were small but significant correlations between student NCEs and selections received for most subgroups in both years of the study. In general, the more popular the student, as determined by the selections received, the higher the achievement level of the student as determined by NCE scores.

Insert Table 8 about here

We next investigated more specifically the relationship between the achievement level of the students selected and

their popularity level. Students were divided into three groups of popularity comprising approximately 12% of the students at the extremes and 75% of the students in the middle. Popularity was determined by the number of selections received, with students selected once or not at all (approximately 12% of the students) classified as "Low", students receiving from 2-12 selections (approximately 75% of the students) as "Average", and those receiving more than 12 selections (approximately 12% of the students) as "High" in popularity. As seen in Table 8, in both 1989 and 1990, and in all three grades, the least popular students in classrooms had the lowest average Metropolitan Achievement Test Basic Battery NCE scores while the most popular students had the highest scores. Differences in achievement level by popularity level were significant totally and in grade 4 in both years, with differences in NCE scores between low popularity students and high popularity students averaging approximately one half of a standard deviation.

Insert Table 9 about here

Insert Table 10 about here

In Tables 9 and 10, the mean number of selections received by students at each achievement level for various subgroups in 1989 and 1990 is presented. As seen there, the number of selections received by students on the Springfield sociometric test varied significantly according to achievement level. Regardless of race, grade level, or sex, the most popular students in a typical elementary classroom in Springfield are high-achieving students, while the least popular students, consistently, are low-achieving students. Differences in popularity according to achievement levels are most apparent for white students, who are typically the higher achieving students in a classroom. White low achievers are particularly unpopular, averaging less than 5 selections apiece in 1990. On the other hand, black high achievers are not as popular as would be expected due to their achievement, averaging more than one-half of a selection less than their white or Hispanic peers. Blacks, in general, received fewer selections than either white or Hispanic students, regardless of achievement level.

The pattern observed by race was also evident by grade level. Whether in fourth, fifth, or sixth grade, low-achieving students, on the average, received fewer friendship nominations than did average or high-achieving students. These differences were greatest at the grade 4 level. Similarly, with regards to sex, high-achieving boys and girls were more popular, on the average, than low-achieving boys or girls. Such observed differences were higher (and significant) for girls.

Although the results found in Springfield do not necessarily generalize to other desegregating communities, research evidence does imply that these findings are not unique to Springfield. The evidence presented above provides a clear indication that there is a definite relationship between student achievement levels and student friendship selections in Springfield. Students tend to select students of similar achievement levels as themselves and tend to select high-achieving students more frequently than low-achieving students, regardless of race, grade level, or gender. As a result, it would appear that educational practices that exacerbate achievement differences between students need to be reduced or replaced with practices which, instead, bring together students of wide ranging ability or

achievement levels for learning during significant portions of the school day.

In order to reverse the declines in integration observed over the past three years in Springfield and to improve integration, efforts must be made to break down achievement barriers to student friendships, particularly when those barriers divide students by race or ethnicity. Remedial, basic skills, or talented and gifted pull-out programs, which may tend to segregate students along racial or ethnic lines for significant portions of the school day, should be discouraged and should be replaced with new instructional techniques such as cooperative learning. As our school system begins a new desegregation plan (controlled choice) under the direction of a new superintendent of schools and as our staff begins to be trained in new teaching techniques such as cooperative learning and begins to implement these techniques within their classrooms, it will be important to closely monitor the resulting impact on integration using the sociometric techniques which have been devised. The sociometric instrument and reporting system developed in Springfield will hopefully continue to provide useful information at the classroom level as well as at the district level.

Summary

In order to evaluate the success of the attempt to transform desegregated schools into those that are truly integrated, a fair, valid, reliable and quantifiable measure of integration, utilized on a regular ongoing basis, is necessary. The measure should provide useful evaluation information for classroom teachers, who are on the front line in efforts to integrate, as well as for program planners who need to make decisions affecting the entire school system. The sociometric instrument and reporting system devised for use in the Springfield Public Schools has been providing both types of information for a number of years, enabling both classroom teachers and program planners to improve the delivery of instruction with a resulting improvement in integration.

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Appendix A

SPRINGFIELD PUBLIC SCHOOLS
Springfield, Massachusetts

Elementary Sociogram

A. Please print the following information:

YOUR FIRST NAME_____ YOUR LAST INITIAL_____

TEACHER'S NAME_____ DATE_____

SCHOOL_____ ROOM_____ GRADE_____

B. Please answer each of the following questions by printing the first name and the last initial of one student from your classroom.

1. Which classmate would you choose to work with on a school project?

_____ First Name _____ Last Initial

2. Which student would you choose to eat with at lunch time?

_____ First Name _____ Last Initial

3. Which classmate would you pair up with to go on a field trip?

_____ First Name _____ Last Initial

4. With which student do you most like to play games?

_____ First Name _____ Last Initial

5. What student would you most like to sit next to in school?

_____ First Name _____ Last Initial

6. Who is your newest friend in the classroom?

_____ First Name _____ Last Initial

7. Which classmate would you choose to come to your home for a party?

_____ First Name _____ Last Initial

Appendix B

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SOCIOGRAM REPORT FOR PRACTICE SCHOOL,ROOM 7...MAY 90 TESTING

SOCIOGRAM SELECTION TABLE

NO.	SELECTING STUDENT	:	PROJECT	LUNCH	TRIP	GAME	SIT NEAR	NEW FRIEND	PARTY
1	ALBERT	:	MICHELLE	MICHELLE	MICHELLE	MIKE	MICHELLE	MIKE	MICHELLE
2	JOHN D	:	JOSE	JOSE	MARK	JOSE	JOSE	JOSE	JOSE
3	JARED	:	JOSE	JORGE	JOSE	DANIEL	JOSE	JOHN C	JORGE
4	MIKE	:	ALBERT	ALBERT	ALBERT	JOSE	JOSE	ALBERT	JOSE
5	MARK	:	JORGE	ROBERT	JORGE	JOSE	MIKE	ROBERT	TAROY
6	MARIA B	:	SABRINA	JULIE	MICHELLE	JULIE	JULIE	JULIE	JULIE
7	JENNIFER	:	STACEY	STEFANIE	STACEY	STACEY	STEFANIE	ROBERT	STEFANIE
8	STACEY	:	JENNIFER	JENNIFER	JENNIFER	JENNIFER	JENNIFER	MICHELLE	JENNIFER
9	MARIA K	:	ALHIM	STEFANIE	STEFANIE	MELISSA	ALHIM	ALHIM	STEFANIE
10	STEFANIE	:	MELISSA	MELISSA	MARK	STACEY	MARIA K	MICHELLE	MARK
11	MELISSA	:	STEFANIE	STACEY	MARIA K	STACEY	STEFANIE	ALHIM	STEFANIE
12	LAURALEE	:	MELISSA	BETTY	MARIA K	BETTY	STACEY	MICHELLE	BETTY
13	TAROY	:	JORGE	DANIEL	JORGE	JOHN D	JORGE	ROBERT	JORGE
14	ROBERT	:	MARK	MARK	MARK	MARK	MARK	MARK	MARK
15	SABRINA	:	SHAWNA	WANDA	WANDA	SHAWNA	WANDA	WANDA	WANDA
16	SHAWNA	:	IVETTE	MICHELLE	STACEY	LAURALEE	BETTY	MIKE	STACEY
17	BETTY	:	ALHIM	LAURALEE	STEFANIE	RAQUEL	ALHIM	ALHIM	MELISSA
18	DANIEL	:	JOHN C	JOSE	JOHN C	JOSE	JOHN C	JOSE	JOHN C
19	JOHN C	:	JOSE	JOSE	JOSE	DANIEL	JOSE	JOSE	JOSE
20	JOSE	:	DANIEL	JOHN C	MARK	MIKE	JARED	WANDA	TAROY
21	JORGE	:	RAQUEL	DANIEL	DANIEL	DANIEL	DANIEL	MARK	DANIEL
22	RAQUEL	:	JULIE	JULIE	JULIE	EMELISSA	JULIE	ALHIM	JULIE
23	EMELISSA	:	MARIA B	JULIE	MELISSA	RAQUEL	MARIA B	MIKE	RAQUEL
24	WANDA	:	SABRINA	MICHELLE	SABRINA	BETTY	JENNIFER	EMELISSA	JOHN C
25	MICHELLE	:	RAQUEL	ALBERT	SHAWNA	ALBERT	ALBERT	MIKE	ALBERT
26	ALHIM	:	MARIA K	MARIA K	MARIA K	MARIA K	MARIA K	MARIA K	MARIA K
27	IVETTE	:	SHAWNA	SHAWNA	MELISSA	STACEY	SHAWNA	ROBERT	JOHN C
28	JULIE	:	MARIA B	MARIA B	RAQUEL	MARIA B	RAQUEL	MARIA B	MARIA B

SOCIOGRAM REPORT FOR PRACTICE SCHOOL, ROOM 7 *****PART 2

NUMBER OF TIMES EACH STUDENT SELECTED EACH OTHER STUDENT

SELECTOR	SELECTIONS																										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
1 ALBERT	**			2																					5			
2 JOHN D		**			1															6								
3 JARED			**															1	1	3	2							
4 MIKE	4			**																3								
5 MARK				1	**							1	2							1	2							
6 MARIA B						**								1											1			5
7 JENNIFER							**	3		3			1															
8 STACEY							6	**																	1			
9 MARIA K									**	3	1															3		
10 STEFANIE					2			1	1	**	2														1			
11 MELISSA								2	1	3	**															1		
12 LAURALEE								1	1		1	**					3								1			
13 TARDY		1										**	1					1			4							
14 ROBERT					7								**															
15 SABRINA															**	2								5				
16 SHAWNA				1				2			1					**	1								1		1	
17 BETTY									1	1	1						**				1					3		
18 DANIEL																		**	4	3								
19 JOHN C																		1	**	6								
20 JOSE			1	1	1							1						1	1	**			1					
21 JORGE					1													5			**	1						
22 RAQUEL																						**	1			1		5
23 EMELISSA				1		2				1												2	**					1
24 WANDA							1							2		1		1					1	**	1			
25 MICHELLE	4			1												1						1			**			
26 ALHIM									7																	**		
27 IVETTE								1		1			1		3				1								**	
28 JULIE						5																2						**

SOCIOGRAM REPORT FOR PRACTICE SCHOOL, ROOM 7 *****PART 3

RECIPROCAL PAIRS (STUDENTS THAT PICKED EACH OTHER AT LEAST ONCE)

ALBERT	<----->	MIKE
JENNIFER	<----->	STACEY
MARIA K	<----->	STEFANIE
MARIA K	<----->	MELISSA
STEFANIE	<----->	MELISSA
MARK	<----->	ROBERT
LAURALEE	<----->	BETTY
DANIEL	<----->	JOHN C
JARED	<----->	JOSE
MIKE	<----->	JOSE
MARK	<----->	JOSE
DANIEL	<----->	JOSE
JOHN C	<----->	JOSE
MARK	<----->	JORGE
RAQUEL	<----->	EMELISSA
SABRINA	<----->	WANDA
ALBERT	<----->	MICHELLE
SHAWNA	<----->	MICHELLE
MARIA K	<----->	ALHIM
SHAWNA	<----->	IVETTE
MARIA B	<----->	JULIE
RAQUEL	<----->	JULIE

SOCIOGRAM REPORT FOR PRACTICE SCHOOL, ROOM 7 *****PART 4

NUMBER OF CROSS RACIAL SELECTIONS BY EACH STUDENT

STUDENTS		ACTUAL CROSS-RACIAL SELECTIONS	EXPECTED CROSS-RACIAL SELECTION
1	ALBERT	5	4
2	JOHN D	6	4
3	JARED	7	4
4	MIKE	3	4
5	MARK	6	4
6	MARIA B	7	4
7	JENNIFER	1	4
8	STACEY	1	4
9	MARIA K	3	4
10	STEFANIE	1	4
11	MELISSA	1	4
12	LAURALEE	4	4
13	TAROY	6	6
14	ROBERT	7	6
15	SABRINA	5	7
16	SHAWNA	7	7
17	BETTY	7	7
18	DANIEL	0	5
19	JOHN C	0	5
20	JOSE	4	5
21	JORGE	1	5
22	RAQUEL	0	4
23	EMELISSA	4	4
24	WANDA	4	4
25	MICHELLE	6	4
26	ALHIM	7	4
27	IVETTE	6	4
28	JULIE	5	4

SOCIOGRAM REPORT FOR PRACTICE SCHOOL, ROOM 7 ***** PART 5

POPULARITY OF EACH STUDENT

STUDENT		TIMES SELECTED	CHOICE STATUS: TIMES SELECTED/(STUDENTS-1)
1	ALBERT	8	0.30
2	JOHN D	1	0.04
3	JARED	1	0.04
4	MIKE	7	0.26
5	MARK	12	0.44
6	MARIA B	7	0.26
7	JENNIFER	7	0.26
8	STACEY	10	0.37
9	MARIA K	10	0.37
10	STEFANIE	10	0.37
11	MELISSA	7	0.26
12	LAURALEE	2	0.07
13	TAROY	2	0.07
14	ROBERT	5	0.19
15	SABRINA	3	0.11
16	SHAWNA	6	0.22
17	BETTY	5	0.19
18	DANIEL	9	0.33
19	JOHN C	8	0.30
20	JOSE	22	0.81
21	JORGE	8	0.30
22	RAQUEL	7	0.26
23	EMELISSA	2	0.07
24	WANDA	6	0.22
25	MICHELLE	11	0.41
26	ALHIM	8	0.30
27	IVETTE	1	0.04
28	JULIE	11	0.41

SOCIOGRAM REPORT FOR PRACTICE SCHOOL,ROOM 7 *****PART 6

CROSS RACIAL SELECTIONS BY GROUPS

GROUP	# OF STUDENTS	# OF CROSS RACIAL SELECTIONS	# OF TOTAL SELECTIONS	ACTUAL CRS RATE	EXPECTED CRS RATE
WHITES	12	45	84	54 %	61 %
BLACKS	4	25	28	89 %	92 %
ASIANS	1	7	7	100 %	100 %
HISPANICS	11	37	77	48 %	65 %
WHITE BOYS	5	27	35	77 %	60 %
WHITE GIRLS	7	18	49	37 %	63 %
BLACK BOYS	2	13	14	93 %	90 %
BLACK GIRLS	2	12	14	86 %	94 %
ASIAN BOYS	0	***	***	***	***
ASIAN GIRLS	1	7	7	100 %	100 %
HISPANIC BOYS	4	5	28	18 %	70 %
HISPANIC GIRLS	7	32	49	65 %	63 %
ALL BOYS	11	45	77	58 %	69 %
ALL GIRLS	17	69	119	58 %	68 %
CLASS	28	114	196	58 %	66 %

SOCIOGRAM REPORT FOR PRACTICE SCHOOL, ROOM 7*****PART 7

In the table on the previous page, the actual CRS rate as a percent can be compared to the CRS rate you would expect by chance as determined by the racial proportions of each gender subgroup in the class (since most students select within their own gender subgroup.) If there were any statistically significant differences between the ACTUAL CRS RATES and the EXPECTED CRS RATES, they have been starred below. If the ACTUAL CRS RATE was significantly LOWER than the EXPECTED CRS RATE for a subgroup, this would mean that this subgroup made significantly FEWER cross-racial selections than would be expected by chance. You migh wish to explore why this was so and, if necessary, try to increase the cross-racial acceptance of these students. Some activities that have proven successful at this include the following:

1. Rearranging seating or work groups frequently in order to change patterns of interaction
2. Encouraging students to play many different roles within the class, particularly leadership roles
3. Teaching students how to interract and how to work together in group situations
4. Planning frequent activities which allow students to interact
5. Utilizing cooperative small group or student team learning methods
6. Planning activities with varying structure which allow students to display many different talents
7. Allowing for peer tutoring
8. Teaching students about the history and culture of different ethnic groups
9. Using multi-ethnic curriculum materials
10. Celebrating or discussing various ethnic holidays or events.

*****THERE WAS A STATISTICALLY SIGNIFICANT DIFFERENCE BETWEEN THE ACTUAL AND EXPECTED CRS RATE FOR HISPANIC STUDENTS*****

*****THERE WAS A STATISTICALLY SIGNIFICANT DIFFERENCE BETWEEN THE ACTUAL AND EXPECTED CRS RATE FOR WHITE GIRLS*****

*****THERE WAS A STATISTICALLY SIGNIFICANT DIFFERENCE BETWEEN THE ACTUAL AND EXPECTED CRS RATE FOR HISPANIC BOYS*****

*****THERE WAS A STATISTICALLY SIGNIFICANT DIFFERENCE BETWEEN THE ACTUAL AND EXPECTED CRS RATE FOR THE CLASS*****

SOCIOGRAM REPORT FOR PRACTICE SCHOOL,ROOM 7 *****PART 8

CROSS-RACIAL SELECTIONS BY QUESTION

QUESTION	# OF CRS	# OF TOT SEL	CRS RATE(%)
Project	15	28	54%
Lunch	15	28	54%
Trip	15	28	54%
Game	16	28	57%
Sit Near	17	28	61%
New Friend	20	28	71%
Party	16	28	57%
TOTAL	114	196	58%

Table 1

Percentage of Selections That Were Cross-Racial by Group

		White		Black		Hispanic									
Ts	Yr	Boy	Grl	Boy	Grl	Boy	Grl	Whi	Blc	His	Boy	Grl	3-4	5-6	Tot
1	78	22	20	48	40	40	40	21	44	40	32	28	31	28	30
2		23	19	47	37	43	40	21	42	42	32	27	31	28	30
3	79	27	22	48	40	41	34	24	44	38	35	29	32	32	32
4		24	23	50	39	40	34	24	44	37	34	30	31	33	32
5	80	28	25	53	44	43	40	26	48	42	37	33	37	33	35
6		26	28	51	41	42	41	27	46	42	35	34	36	33	35
7	81	27	26	53	43	39	41	27	48	40	36	34	38	32	35
8		28	26	55	42	40	35	27	48	38	37	32	38	31	35
9	82	31	27	53	49	47	46	29	51	47	40	37	40	37	39
10		30	28	50	47	47	44	29	49	46	40	37	40	36	38
11	83	35	28	52	54	47	42	31	53	44	43	38	41	40	40
12		38	30	51	52	48	41	34	52	44	44	38	41	41	41
13	84	39	32	58	52	47	43	35	55	45	46	40	43	43	43
14		38	34	57	53	47	42	36	55	45	46	41	44	44	44
15	85	35	35	60	53	51	47	35	57	49	45	43	46	43	44
16		37	33	61	52	52	47	35	56	50	47	41	45	44	45
17	86	41	36	63	55	52	48	38	59	50	50	45	49	46	48
18		38	35	63	55	50	43	36	59	46	48	43	46	44	45
19	87	37	36	61	55	50	42	37	58	46	47	43	45	46	45
20		36	35	58	52	50	42	36	55	46	46	42	44	44	44
21	88	37	33	58	48	44	41	35	53	42	45	40	43	43	43
22		39	34	56	48	48	37	36	52	42	47	39	41	45	43
23	89	37	30	52	53	47	39	33	53	43	44	39	42	41	42
24		37	33	54	54	49	40	35	54	45	45	41	43	43	43
Ave		33	30	55	48	46	41	31	52	44	42	37	40	39	40

Table 2

Ratio of Actual to Expected Cross-Racial Selections by Group

		White		Black		Hispanic									
Ts	Yr	Boy	Grl	Boy	Grl	Boy	Grl	Whi	Blc	His	Boy	Grl	3-4	5-6	Tot
1	78	.51	.45	.65	.55	.48	.48	.48	.60	.48	.55	.49	.55	.49	.52
2		.52	.43	.64	.52	.52	.48	.48	.58	.50	.56	.47	.54	.49	.52
3	79	.59	.46	.66	.56	.50	.42	.53	.61	.46	.59	.49	.55	.53	.54
4		.54	.48	.69	.55	.49	.42	.51	.62	.45	.58	.49	.53	.54	.53
5	80	.60	.52	.71	.61	.55	.50	.56	.66	.52	.62	.55	.62	.54	.58
6		.57	.57	.68	.57	.53	.52	.57	.62	.52	.59	.56	.61	.54	.58
7	81	.57	.51	.71	.61	.50	.53	.54	.66	.51	.60	.55	.62	.52	.57
8		.59	.49	.74	.59	.51	.46	.54	.66	.49	.62	.51	.62	.51	.57
9	82	.62	.54	.75	.69	.60	.59	.58	.72	.59	.66	.60	.65	.61	.63
10		.60	.55	.71	.66	.60	.56	.58	.69	.58	.64	.59	.64	.58	.61
11	83	.68	.52	.73	.74	.61	.57	.60	.73	.59	.68	.60	.64	.65	.64
12		.72	.57	.73	.70	.62	.56	.64	.72	.59	.70	.59	.64	.66	.65
13	84	.72	.59	.81	.72	.64	.58	.65	.76	.61	.72	.63	.67	.67	.67
14		.70	.63	.79	.75	.63	.56	.67	.77	.60	.72	.64	.69	.67	.69
15	85	.67	.64	.82	.74	.68	.64	.66	.79	.66	.71	.67	.72	.68	.69
16		.71	.61	.85	.72	.68	.64	.66	.78	.67	.75	.66	.70	.70	.70
17	86	.76	.64	.84	.75	.72	.67	.69	.80	.69	.78	.69	.75	.72	.74
18		.70	.61	.85	.75	.69	.61	.65	.80	.64	.75	.66	.71	.69	.69
19	87	.69	.63	.82	.76	.69	.58	.66	.79	.64	.72	.65	.69	.71	.69
20		.65	.60	.78	.73	.69	.59	.63	.75	.64	.71	.64	.67	.68	.68
21	88	.64	.57	.81	.67	.62	.58	.60	.74	.59	.68	.61	.65	.65	.65
22		.67	.58	.78	.67	.68	.52	.62	.72	.59	.71	.59	.62	.68	.65
23	89	.65	.53	.71	.73	.66	.55	.58	.73	.61	.67	.59	.64	.64	.64
24		.65	.58	.74	.74	.69	.56	.61	.74	.63	.68	.62	.65	.66	.65
Ave		.64	.55	.75	.67	.61	.55	.60	.71	.58	.67	.59	.64	.62	.63

Table 3

Metropolitan Achievement Tests Basic Battery Scores by Race

		1988			1989			1990		
Gr	Score	W	B	H	W	B	H	W	B	H
3.7	NP	63	43	39	61	40	36	64	43	33
	GE*	4.3	3.4	3.4	4.1	3.4	3.4	4.4	3.5	3.2
4.7	NP	76	57	52	78	60	58	76	58	50
	GE*	6.0	4.9	4.6	6.1	5.0	4.9	6.0	4.8	4.5
5.7	NP	63	42	30	66	45	35	68	48	36
	GE*	6.1	5.2	4.8	6.7	5.4	5.1	6.7	5.4	4.9
6.7	NP	63	45	35	71	53	40	71	50	40
	GE*	7.6	6.1	5.6	8.0	6.8	5.8	8.1	6.6	5.8

* Median GE

Table 4

Correlations of Metropolitan Achievement Test Basic Battery NCE Scores of Selectors with NCE Scores of Selections

	1989		1990	
Group	n	Correlation	n	Correlation
White	1046	.41*	986	.38*
Black	597	.34*	603	.24*
Hispanic	444	.37*	526	.29*
Grade 4	1101	.41*	1128	.36*
Grade 5	599	.31*	684	.36*
Grade 6	401	.49*	322	.50*
Male	1038	.43*	1032	.40*
Female	1063	.45*	1102	.41*
Total	2101	.44*	2134	.41*

* $p < .01$

Table 5

Metropolitan Achievement Test Basic Battery NCE of Students Selected by Achievement Level of Students Selecting: 1989

		Achievement Level of Selectors				
Group		Low	Mid	High	Tot	F
White	n	65	599	382	1046	70.52*
	M	51.4	56.8	65.9	59.8	
	SD	12.8	12.4	14.2	14.0	
Black	n	99	389	109	597	29.00*
	M	48.5	52.0	61.1	53.1	
	SD	11.5	13.3	12.0	13.4	
Hispanic	n	106	287	51	444	22.50*
	M	44.4	50.9	59.2	50.3	
	SD	14.0	13.1	11.5	13.8	
Grade 4	n	183	698	220	1101	86.80*
	M	45.7	51.3	61.8	52.5	
	SD	13.0	12.6	13.7	13.8	
Grade 5	n	33	333	233	599	17.11*
	M	56.8	60.1	66.2	62.3	
	SD	12.7	13.0	14.1	13.8	
Grade 6	n	54	253	94	401	43.47*
	M	48.4	53.3	65.2	55.5	
	SD	11.3	12.2	12.4	13.3	
Male	n	147	630	261	1038	75.96*
	M	46.9	54.1	62.6	55.2	
	SD	12.1	12.9	13.2	13.8	
Female	n	123	654	286	1063	100.23*
	M	48.3	53.9	65.8	56.4	
	SD	14.2	13.1	14.1	14.9	
Total	n	270	1284	547	2101	174.90*
	M	47.6	54.0	64.3	55.8	
	SD	13.1	13.1	13.8	14.4	

* $p < .01$

Table 6

Metropolitan Achievement Test Basic Battery NCE of Students Selected by Achievement Level of Students Selecting: 1990

		Achievement Level of Selectors				
Group		Low	Mid	High	Tot	F
White	n	62	496	428	986	72.29*
	M	50.2	57.0	66.2	60.6	
	SD	12.7	13.7	13.6	14.5	
Black	n	86	413	104	603	12.57*
	M	48.9	53.3	58.0	53.5	
	SD	13.5	11.9	13.6	12.7	
Hispanic	n	143	329	54	526	20.32*
	M	44.4	51.2	56.4	49.9	
	SD	13.5	12.8	15.7	13.8	
Grade 4	n	208	677	243	1128	62.13*
	M	46.5	51.9	60.6	52.8	
	SD	13.7	13.0	15.7	14.5	
Grade 5	n	51	396	237	684	45.83*
	M	52.0	57.6	66.2	60.1	
	SD	11.5	12.3	13.4	13.4	
Grade 6	n	34	174	114	322	48.20*
	M	43.2	56.0	66.1	58.2	
	SD	13.6	13.4	11.4	14.5	
Male	n	163	600	269	1032	87.61*
	M	44.9	53.7	63.0	54.7	
	SD	13.6	13.9	14.8	15.2	
Female	n	130	647	325	1102	86.66*
	M	49.7	54.8	64.6	57.1	
	SD	12.9	12.3	13.9	13.8	
Total	n	293	1247	594	2134	175.45*
	M	47.0	54.3	63.9	56.0	
	SD	13.5	13.1	14.3	14.6	

* $p < .01$

Table 7

Correlation of Metropolitan Achievement Test Basic Battery NCE Scores of Students Selected With Number of Selections Received

Group	1989 n	1989 Correlation	1990 n	1990 Correlation
White	1136	.16**	1104	.17**
Black	668	.08*	687	.10**
Hispanic	509	.06	591	.13**
Grade 4	1208	.14**	1249	.14**
Grade 5	669	.09	778	.11**
Grade 6	450	.13**	375	.15**
Male	1146	.11**	1160	.08**
Female	1181	.12**	1242	.17**
Total	2327	.11**	2402	.13**

* $p < .05$ ** $p < .01$

Table 8

Metropolitan Achievement Test Basic Battery NCE Score of Students Selected by Popularity and Grade Level

			Popularity Level (0-1) Low	(2-12) Ave	(12+) High	Total	F
89	4	n	161	903	144	1208	9.99**
		M	45.1	50.1	54.1	49.9	
		SD	17.1	17.8	18.0	17.8	
	5	n	103	511	55	669	2.25
		M	58.0	61.1	64.1	60.9	
		SD	17.7	17.7	20.5	18.0	
	6	n	56	354	40	450	2.67
		M	50.6	53.0	58.9	53.3	
		SD	18.9	17.7	16.2	17.8	
	Tot	n	320	1768	239	2327	10.12**
		M	50.2	53.9	57.2	53.7	
		SD	18.5	18.3	18.8	18.5	
90	4	n	176	929	144	1249	13.89**
		M	45.5	50.6	56.1	50.5	
		SD	17.3	18.0	19.3	18.3	
	5	n	110	568	100	778	1.95
		M	56.5	58.3	61.4	58.4	
		SD	20.6	18.8	14.9	18.6	
	6	n	68	279	28	375	4.58*
		M	50.3	56.7	61.2	55.9	
		SD	19.6	18.1	18.4	18.6	
	Tot	n	354	1776	272	2402	17.28**
		M	49.8	54.1	58.6	53.9	
		SD	19.4	18.6	17.8	18.8	

* $p < .05$ ** $p < .01$

Table 9

Mean Number of Selections Received by Achievement Level

1989

Group		Achievement Level Low	Mid	High	Tot	F
White	n	71	648	417	1136	10.83*
	M	5.37	6.11	7.30	6.50	
	SD	3.97	4.54	4.78	4.64	
Black	n	117	435	116	668	1.58
	M	5.45	6.23	6.35	6.12	
	SD	4.27	4.64	4.18	4.51	
Hispanic	n	122	327	60	509	1.06
	M	6.22	6.98	6.92	6.79	
	SD	4.21	5.06	5.55	4.93	
Grade 4	n	207	763	238	1208	9.48*
	M	5.54	6.65	7.53	6.63	
	SD	4.21	4.99	4.81	4.86	
Grade 5	n	40	369	260	669	1.86
	M	6.45	6.01	6.70	6.30	
	SD	4.06	4.50	4.51	4.49	
Grade 6	n	63	287	100	450	2.06
	M	5.94	6.13	7.11	6.32	
	SD	4.17	4.23	5.19	4.46	
Male	n	171	689	286	1146	2.32
	M	6.01	6.38	6.95	6.47	
	SD	3.95	4.94	5.19	4.88	
Female	n	139	730	312	1181	8.74*
	M	5.40	6.38	7.24	6.49	
	SD	4.44	4.51	4.33	4.49	
Total	n	310	1419	598	2327	9.60*
	M	5.74	6.38	7.10	6.48	
	SD	4.18	4.73	4.76	4.68	

* $p < .01$

Table 10

Mean Number of Selections Received by Achievement Level

1990

		Achievement Level				
Group		Low	Mid	High	Tot	F
White	n	70	562	472	1104	14.08**
	M	4.99	5.98	7.28	6.47	
	SD	3.84	4.44	4.95	4.68	
Black	n	98	466	123	687	1.97
	M	5.61	6.39	6.82	6.36	
	SD	4.16	4.60	4.64	4.56	
Hispanic	n	168	365	58	591	
	M	5.57	7.14	7.67	6.75	6.30**
	SD	4.97	4.96	7.03	5.25	
Grade 4	n	234	753	262	1249	12.68**
	M	5.71	6.58	7.84	6.68	
	SD	4.59	4.71	5.21	4.84	
Grade 5	n	59	554	276	778	4.33*
	M	5.03	6.39	7.02	6.51	
	SD	4.20	4.79	5.18	4.91	
Grade 6	n	45	206	124	375	3.01*
	M	4.78	5.91	6.58	6.00	
	SD	4.48	4.07	4.56	4.31	
Male	n	189	665	306	1160	2.74
	M	5.90	6.43	6.92	6.47	
	SD	4.70	4.71	4.75	4.73	
Female	n	149	737	356	1242	17.00**
	M	4.91	6.42	7.56	6.57	
	SD	4.21	4.59	5.37	4.85	
Total	n	338	1402	662	2402	16.68**
	M	5.47	6.42	7.26	6.52	
	SD	4.51	4.65	5.09	4.79	

* $p < .05$ ** $p < .01$

Figure Captions

Figure 1. City total cross-racial selection rates over twelve years: 1978-1979--1989-90.

Figure 2. City total ratios of actual to expected cross-racial selections over twelve years: 1978-79--1989-90.

Figure 1

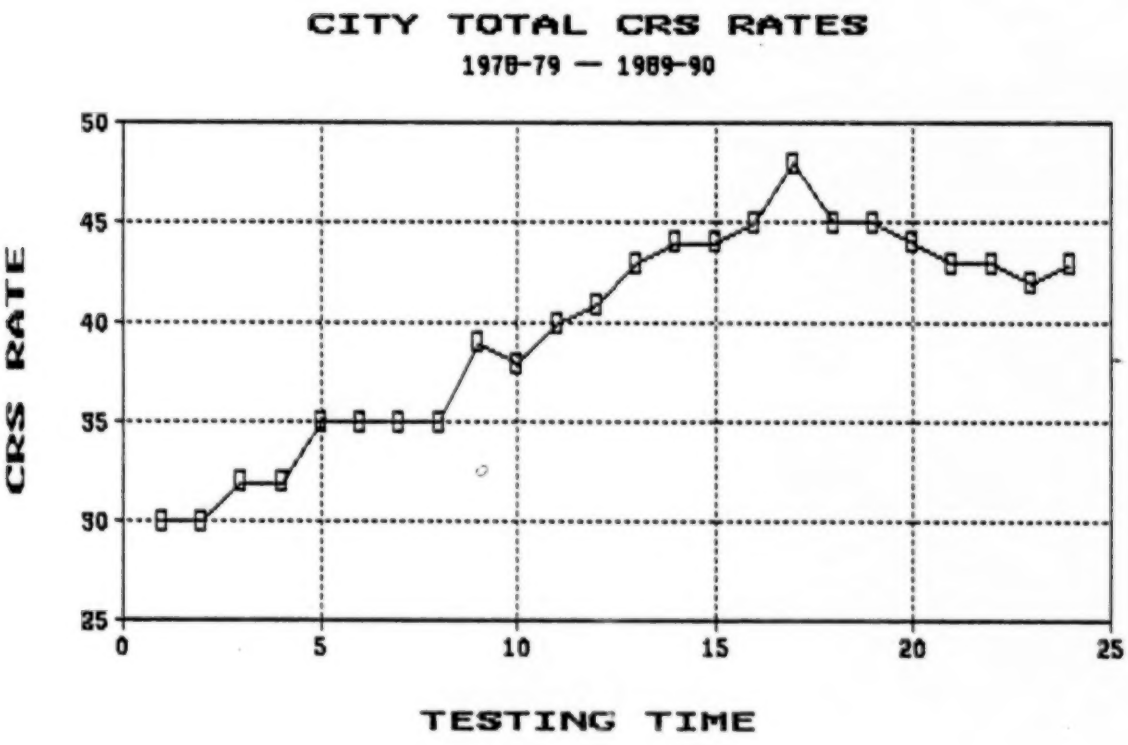
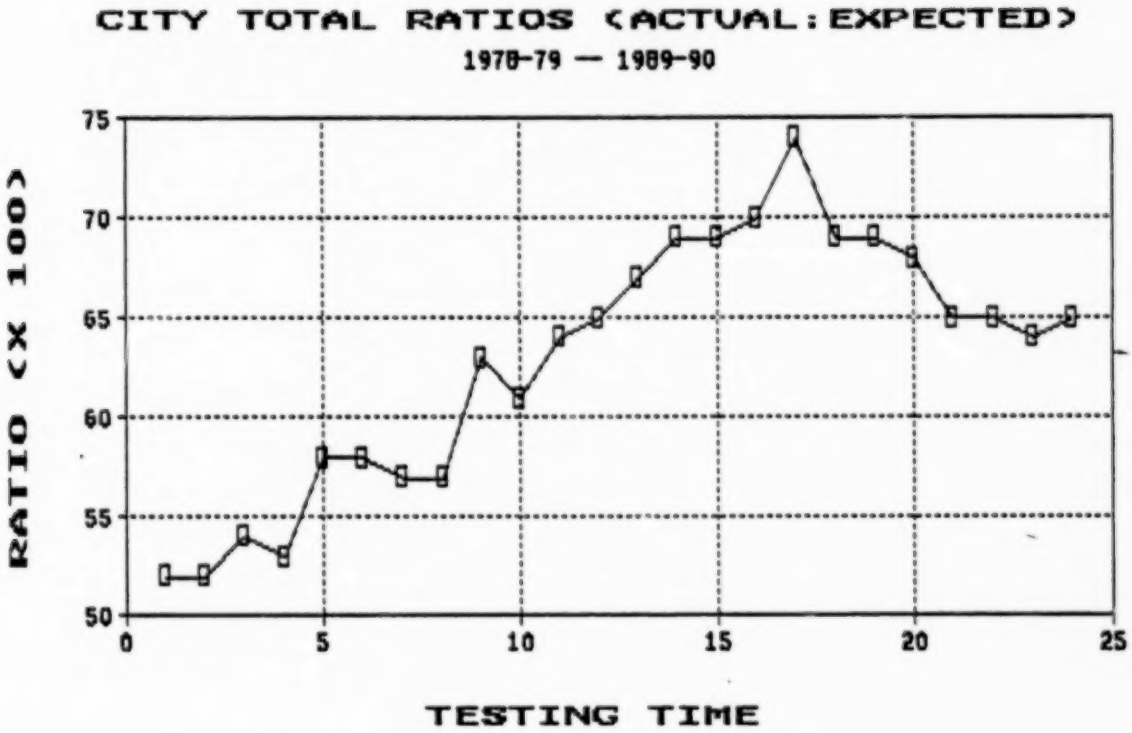

CITY TOTAL CRS RATES
1978-79 — 1989-90
CRS RATE
50
45
40
35
30
25
0
5
10
15
20
25
TESTING TIME

Figure 2


CITY TOTAL RATIOS (ACTUAL:EXPECTED)
1978-79 — 1989-90
RATIO (X 100)
75
70
65
60
55
50
0
5
10
15
20
25
TESTING TIME